



Getting a grip

Spacewalking astronauts will test five crew self rescue concepts on the STS-49 mission. Story on Page 3.



Nicholson moving

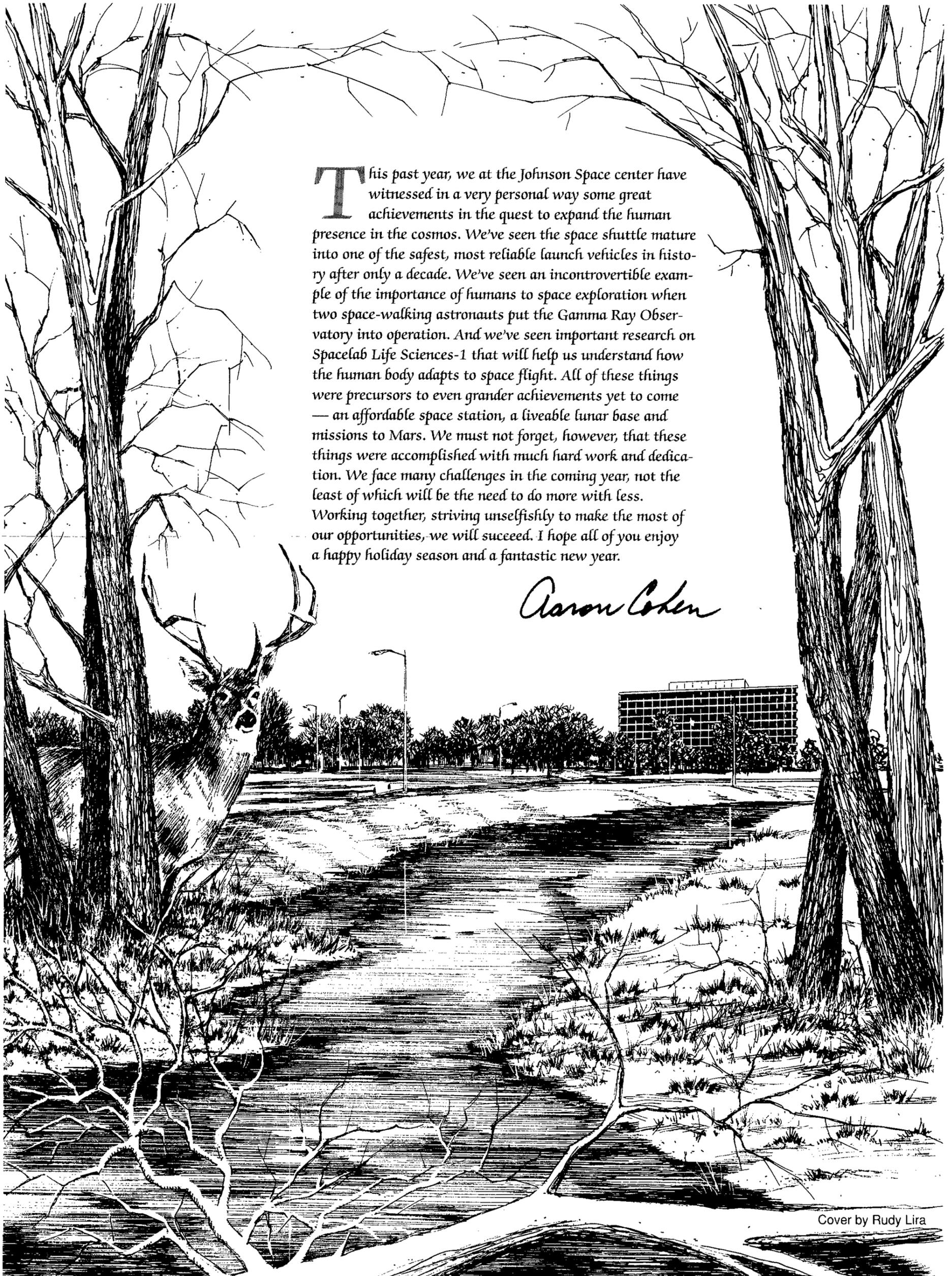
Leonard Nicholson will move to Kennedy Space Center to become the new director of the Space Shuttle Program. Story on Page 4.

Space News Roundup

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This past year, we at the Johnson Space center have witnessed in a very personal way some great achievements in the quest to expand the human presence in the cosmos. We've seen the space shuttle mature into one of the safest, most reliable launch vehicles in history after only a decade. We've seen an incontrovertible example of the importance of humans to space exploration when two space-walking astronauts put the Gamma Ray Observatory into operation. And we've seen important research on Spacelab Life Sciences-1 that will help us understand how the human body adapts to space flight. All of these things were precursors to even grander achievements yet to come — an affordable space station, a liveable lunar base and missions to Mars. We must not forget, however, that these things were accomplished with much hard work and dedication. We face many challenges in the coming year, not the least of which will be the need to do more with less. Working together, striving unselfishly to make the most of our opportunities, we will succeed. I hope all of you enjoy a happy holiday season and a fantastic new year.

Aaron Cohen

Cover by Rudy Lira

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m.-2 p.m. weekdays.

General Cinema (valid for one year): \$4.

AMC Theater (valid until May 1992): \$3.75.

Loews Theater (valid for one year): \$4.

Astroworld Holiday in the Park (Dec. 1, 13-23, 26-31): \$5.50.

EAA New Year's Eve Dance (7 p.m.-1 a.m. Dec. 31, Gilruth Center, music by Probable Cause and Sterling Silver Orchestra. Tickets go on sale Dec. 24; \$15/person.

Entertainment '92 (coupon book): \$26 for FBA members' first book; \$27 for all others.

JSC

Gilruth Center News

Sign up policy — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

Defensive driving — Course is offered from 8 a.m.-5 p.m. Feb. 8. Cost is \$19.

Aerobic dance — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32.

Exercise — Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24.

Country western dance — Beginning and intermediate class meets for six weeks starting Jan. 6. Cost is \$20 per couple.

Ballroom dance — Beginner, beginner/intermediate, intermediate and advanced classes meet for eight weeks beginning Jan. 2. Cost is \$60 per couple.

Aikido — Martial arts class meets Tuesdays and Fridays beginning Jan. 7. Cost is \$35 per month.

Fitness program — Health Related Fitness Program includes medical examination screening, 12-week individually prescribed education program. Call Larry Wier, x30301.

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Dates & Data

Today

Cafeteria menu — Special: tuna and salmon croquette. Entrees: pork chop with yam rosette, Creole baked cod. Soup: seafood gumbo. Vegetables: Brussels sprouts, green beans, buttered corn, whipped potatoes.

Monday

Cafeteria menu — Special: Italian cutlet. Entrees: braised beef ribs, chicken a la king, enchiladas with chili. Soup: cream of broccoli. Vegetables: navy beans, Brussels sprouts, whipped potatoes.

Tuesday

Cafeteria menu — Special: stuffed cabbage. Entrees: turkey and dressing, round steak with hash browns. Soup: beef and barley. Vegetables: corn cobbette, okra and tomatoes, French beans.

Wednesday

Christmas Day — Most JSC offices will be closed for observance of the Christmas holiday. JSC also will be closed to public visitors.

Thursday

Cafeteria menu — Special: chicken fried steak. Entrees: beef tacos, barbecue ham steak, Hungarian goulash. Soup: turkey and vegetable. Vegetables: spinach,

pinto beans, beets.

Dec. 27

Cafeteria menu — Special: tuna and noodle casserole. Entrees: liver and onions, deviled crabs, roast beef with dressing. Soup: seafood gumbo. Vegetables: whipped potatoes, peas, cauliflower.

Dec. 30

Cafeteria menu — Special: breaded cutlet. Entrees: beef chop suey, Polish sausage with potato salad. Soup: French onion. Vegetables: okra and tomatoes, green peas.

Dec. 31

Cafeteria menu — Special: fried chicken. Entrees: Salisbury steak, shrimp Creole. Soup: split pea. Vegetables: mixed vegetables, beets, whipped potatoes.

Jan. 1

New Year's Day — Most JSC offices will be closed in recognition of the New Year's Day holiday.

Jan. 2

Cafeteria menu — Special: barbecue smoked link. Entrees: beef Stroganoff, turkey and dressing. Soup: chicken noodle. Vegetables: Lima beans, buttered squash, Spanish rice.

Jan. 3

Cafeteria menu — Special: meat sauce and spaghetti. Entrees: baked scrod, liver and onions, fried shrimp. Soup: seafood gumbo. Vegetables: green beans, buttered broccoli, whipped potatoes.

Jan. 9

Blood drive — The first on-site blood drive of the year will be from 8-11:30 a.m. and 1-3:30 p.m. Jan. 9 at the Gilruth Center. Appointments are required; call Helon Crawford, x34159; Mary O'Rear, x36531; or Dan Mangieri, x33003. For more information, call Crawford.

IEEE meets — The Galveston Bay section of the Institute of Electrical and Electronics Engineers will meet at 11:30 a.m. Jan. 9 at the Gilruth Center. Robert Best, of Lockheed Engineering and Sciences Co., will discuss the "Dynamic Space Vehicle Communications Simulator." Reservations are due by 11 a.m. Jan. 6; call Marcia Taylor, x30195.

June 1

Fuzzy logic workshop — JSC and the University of Houston-Clear Lake will host the third International Joint Technology Workshop on Neural Networks and Fuzzy Logic June 1-3, 1992 at the Gilruth Center. For more information, call Carla Armstrong, x39071.

Swap Shop

Property

Rent: Galv condo, furn, sleep 6, Seawall Blvd/61st St, pools, cable TV, wknd/wkly/dly. Magdi Yassa, 333-4760 or 486-0788.

Lease: CLC, Meadowgreen, 4-2-2, FPL, blinds, formals, den, fenced, area pool/tennis, \$885/mo. 280-8796.

Lease: Fuqua/I 45 Fwy, 3-2-2, remodeled, \$595/mo. Minh, 333-6806 or Oanh, 484-2456.

Sale: Lake Conroe lot, paved road, \$6K; Canyon Lake, 5-3, FPL, thermal windows, over 2K sq ft, elevated deck, \$114K. 482-6744.

Lease: CLC, two 1 BR condos, FPL, W/D conn, appli, microwave, tennis, exercise rm. Jim Briley, 335-4389 or 488-7901.

Lease: Friendswood, Wedgewood Village, 3-2-5-2, FPL, lg fenced yard, wet bar, formals, 1.8K sq ft, avail now, \$795/mo. 482-6744.

Sale: Friendswood, 2 lots, 0.95 acre, all util, no flooding, \$32K and \$39K, \$55K/both. Ron, 996-9724.

Sale: LC, Meadowbend, 3-2-2, covered deck, new metal garage, new fixtures. John, x31929 or 334-3422.

Rent: Lake Travis cabin, priv boat dock, CA/H, fully equip, accomm 8, wkly/dly, \$325/\$80. 474-4922.

Lease: Pearland, Springfield, 3-2-2A, 1 yr old, open floor plan, alarm sys, no pets, \$1K/mo. 929-7208 or 489-9337.

Lease: Condo, 1 BR/study, carport, W/D, fans, exercise rm, avail Jan 1st. 488-2946.

Lease: Large 3-2-2, FPL, fenced, new carpet, \$850/mo. 480-3260.

Sale: Shore Acres, 2 lg lots, \$3.2K/ea or reduced price for both. Frank, x34185 or 471-2934.

Rent: Three horse stalls/pasture. Scott, 283-5611 or 331-6847.

Sale: Egret Bay condo, 2-2, covered parking, all appli, FPL, blinds, fan, patio, storage, pools, boat ramp, \$39.5K. 333-9281 or 481-3637.

Lease: Univ Green townhouse, 2-2-5-2, FPL, W/D, pool, no pets, \$750/mo. 488-1036.

Lease: Webster/Ellington condo, 2-1, \$475/mo. Dave, x38156 or Herb, x38161.

Sale: LC, Countryside, 2 story, 3-2-5-2A, lg fenced lot, no approval assum, \$15K down, \$692/mo. 554-7623.

Lease/Sale: CLC, Baywind II condo, 2-2-2, new carpet, blinds, paint, FPL, wet bar, W/D, tennis, pools, \$575/mo. 280-8796.

Rent: Stateline, NV, Heavenly Valley condo, avail 2/24/92 to 3/2/92, \$420. Tom, x38298 or 488-4089.

Cars & Trucks

'78 Porsche, auto, brn w/leather int, 75K mi, \$8.9K. Bill, x39980.

'84 Lincoln Continental, loaded, ex cond, \$5495. Ed, x32586.

'88 Ford Aerostar XLT, loaded, ex cond, \$7.3K OBO. x37033 or 776-9870.

'90 Mitsubishi Eclipse, red w/gray int, AM/FM/cass, tinted windows, alarm

w/remote, separate kill switch, ex cond, \$8.7K. Chris, 872-6125.

'86 Pontiac 6000, V6, auto A/C, sun roof. Brian, 283-4079 or 488-0756.

'88 Ford Mustang LX conv, auto, V4, leather int, loaded, \$7.4K. Chad, x35786 or 486-6125.

'86 Mercury Cougar, red, auto, loaded, ex cond, 88K mi, \$3.9K OBO. Sonda, x31914 or 332-0446.

'86 Mazda RX-7, sports package, A/C, AM/FM/cass, \$6K. Phil, x38805 or 488-4453.

'76 Datsun B210, 2 dr, 4 spd, new eng/trans, \$650 OBO; '59 Chevy PU for restoration or parts, good eng, \$950. 334-2335.

'83 Dodge Colt, wht hatchback, AM/FM/cass, new tires, good cond, needs carb, 80K mi, \$500 OBO. Michelle, x31109 or 474-7263.

'86 F-150 Supercab, XL edition, 351 eng, auto, A/C, ex cond, \$6.5K. 339-1337.

'71 Triumph TR6, ex cond, new tires, \$5.8K. Steve, x38068 or 532-1949.

'83 Chevy S-10 PU, extended cab, 4 WD, topper, ex cond, 103K mi, \$3K. x32781 or 480-0527.

'79 VW pop top camper, rebuilt eng, brakes, \$3.5K. David, 332-9044 or 929-7120.

'79 Chev Caprice Classic, V6, \$650 OBO. 337-4440.

'85 Nissan 300ZX, 2+2, silver, T-top, auto, low mi, digital dash, \$7K. 332-7373.

'91 Geo Storm hatch, air bag, 5 spd, A/C, AM/FM/tape, \$9.2K OBO. 334-1303.

'84 Ford LTD SW, loaded, ex cond, \$1.2K. Joan, x33474 or 554-6433.

'78 Chevy Malibu wagon, 305 V8, A/C, ex cond, \$1695. x35180 or 326-3706.

'79 Mustang, blue, 2 dr, auto, \$600. Terri, 280-2599 or 482-8941.

'84 Ford Tempo, needs trans, \$1K OBO. Jean, x33098 or 337-3510.

Cycles

'91 Suzuki Intruder 750, maroon w/chrome. 3400 mi, ex cond, \$3.5K. 337-6394.

Boats & Planes

'78 36' Islander Freeport sloop, new engine, new trans, new upholstery, new electronics, new bottom, new lighting, 3 sails, 2 TVs, h/c press water, marine a/c, heat, Zodiac dinghy, EPIRB, engine spares, redone throughout, \$64,500. James, x34934 or 554-4353.

'84 Mastercraft ski boat, powerslot, freshwater hrs, \$9.6K; Westwinds Slalom sailboard, \$390; '89 Yamaha Radian, 600cc, less than 10K mi, ex cond, \$1.9K. Rich, x55115 or 486-6142.

Radio controlled sailboat, 1/16 scale, 12 meter sloop, 4 ft long, 6 ft high, never been in water, extra sail, radio equip, \$125. Ted, x30621 or 474-2214.

Audiovisual & Computers

Nintendo, power pad, game car-

tridges, BO. 282-4968.

Casio portable AM/FM/stereo cass player w/headphones, \$25. Rick, 335-4415.

Atari 800, 11 games w/basic, joysticks, ex cond, \$50; New Atari 800 XL, \$50; Atari 800 XL, DD, prtr, SW, ex cond, \$100. 486-8266.

Stereo speakers, 8" woofer, midrange and horn tweeters, custom built cabinet, 14" wide by 22" high, \$60. 480-3424.

Norton util SW; \$50; Norton backup, \$50; Norton antivirus, \$25; Windows, \$40; After Dark For Windows, \$15; Windows resource kit, free w/windows purchase; Excel For Windows, \$150; Turbo C++ For Windows, \$70; Co-Session, \$30; Quicken, \$20; Sidekick, \$15. 339-1337.

Musical Instruments

Jackson bass guitar, custom paint, neck thru body, active electronics, \$450; 1 x 15 tuned port bass cabinet, new JBL speaker, \$200. x36149 or 334-1303.

Photographic

Cambo 4x5 view camera, 210mm and 150mm lenses, case, access, \$850 OBO. x37033 or 776-9870.

Underwater camera, ex cond, Nikonus V, two lenses 35mm and 80mm, framing bar, access, 102 strob, was \$2K, now \$950. Sam, x39723 or 486-5566.

Pets & Livestock

Free cocker spaniel, 1 1/2 yrs, male, cinnamon. 337-6394.

AKC cocker spaniel puppies, parti-color, red/white, champ sired, Wyndsong bloodline, shots, ready for Christmas, \$300. 538-3431.

AKC weimaraner puppies, OFA certified, docked tails, declaws, shots, born 11/8/91, 6 males, 2 females, ready for Christmas. Ed, x38736 or 286-1431.

AKC weimaraner puppies, born 11/13, ready for Christmas, \$200. (409) 925-8183.

AKC chihuahua puppies, shots, wormed, dipped, \$175. x36461 or 534-3893.

AKC yellow lab, 8 mo old male, \$75, portable kennel avail. Michele, 482-9576.

Boxer puppies, born 11/30, fawn, 3 male, 1 female, \$100. 282-4833 or 534-3131.

Sheltie puppies, purebred, sable/wht, \$200. 771-1012.

Miniature schnauzer, female, shots, papers, salt/pepper color, ready 12/21, \$225. 992-4705.

Household

Sanyo 25" color TV, portable w/remote, ex cond, \$275. 337-6394.

Shuttle shaped bunk bed w/toy chest, \$150. Jim, x38588 or 480-7806.

White Westinghouse washer/dryer, good cond, \$125/both. Paul, 280-2532.

Jenny Lind changing table w/pad, \$35; Welch crib, wht, \$75, both in ex cond, 554-4781.

G.E. dishwasher, built-in, pot

scrubber, beige, needs adjust, but runs, \$75. Magdi Yassa, 333-4760 or 486-0788.

Sony Trinitron 27" color console TV w/remote, cable ready, \$175 OBO. Dave, 333-6818 or 486-6859.

Queen sz metal bed frame on casters, 6 mo old, ex cond, \$40. 335-2472.

Bentwood wicker rocking chair, \$25. Rick, 335-4415.

Hardwood table, seats six, \$40. 480-7257.

King sz waterbed, good cond, 90 percent motionless. Jean, x33098 or 337-3510.

Formal dining set w/six chairs, china cabinet, upright antique piano. 282-5335 or 332-3047.

Twin sz bed frame, box spring, \$75. Eric, x39313 or 471-8191.

Wanted

Want vanpool riders from NW Houston area to NASA. Wendell, x36182 or 466-3203.

Want roommate to share 3 BR house in CLC, \$250/mo plus 1/2 util. Rich, 480-2570.

Want to lease garage apartment or room w/kitchen, bathroom, and laundry privileges, avail to move March 1st, UHCL student, nonsmoker. Diane, 480-8365.

Want to form or buy into a partnership in a Beechcraft Bonanza mod 33, 500 ft hrs minimum, IFR rating required. 333-7353 or 532-1826.

Want roommate to share furnished 2 BR apartment with W/D, 5 min fm NASA, \$250/mo, all bills pd, nonsmoker, avail Jan 1st. Susan, 283-5704.

Want carpool to UHUP for spring '92 semester on Tues and Thurs, lv JSC at 4:45pm, arr UHUP at 5:15pm, lv UHUP at 8:30pm, arr JSC at 9:00pm. Nancy, x38275 or 480-4634.

Want ping pong table. Alice, x35234.

Want handgun, revolver or auto, .38 cal or larger. x32055 or 333-6558.

Want Construx plastic construction set. Jim, 337-2838.

Miscellaneous

Foosball table w/balls, \$75. 482-6744. Precor 730e Stair Climber, ex cond, \$450; Schwinn Air-Dyne exercise bike, ex cond, \$600 OBO; jogging stroller w/canopy, \$100. Cindy, x35903 or 332-0427.

'79 Jeep CJ7, factory blk hardtop, factory doors, blue/gray, BO. Rich, x34818 or 480-8335.

Girls Huffy 18" bicycle, \$35; scooter, \$25, both in ex cond. Glenn, 280-8580.

Obrien slalom ski, 167cm, \$150; 1 pair Cut-N-Jump skis, \$75; 1 pair Connely skis, \$50; ski vest, \$35; 2 adult life vests, 2 ski ropes, ski harness, \$5/ea; lg dog kennel, \$25; 3 used BF Goodrich T/A radials, 255/60 SR15, \$25/ea. Keith, x35191 or 332-5170.

14 kt gold Figaro bracelet, 1 yr old, padded case, \$300. 337-4440.

14 kt gold rope bracelet, 14 kt gold ring w/20 pt diamond, BO. Ron, x30887.

One way ticket fm Houston to Orlando, half price on Continental Airlines. x38385.

Leather Karen Silton coat, brown, ex cond, sz 9/10, \$150. T.J., 333-5107.

Men/womens clothes, dress suits, pants, party dresses, jackets, Space Shuttle commemorative items. 488-2946.

Encyclopedias, home, auto, medical, science, children's volumes, dictionary, cookbook, atlas, was \$1400 9/90 BO. 333-7306 or 554-2364.

Marcy Easyrider recumbent exercise bike, fully contoured seat, instrument panel displays RPM, elapsed time, resistance, distance, heart rate, age chart, \$100. Marcia, x39196.

Chain link dog kennel w/gate, roof, 6' x 6' x 6', ex cond, \$150. 489-9337 or 929-7208.

Graco Totwalker III, toybar, confetti print, ex cond, was \$60, now \$25. Kim Keleman, x49850 or 244-9850.

'83 Subaru owner's manual, \$10 OBO; S&W 41 mag, 6" bbl, \$300; S&W 44 mag, 6 1/2" bbl, \$330, both ex cond w/wood presentation boxes. Bob, x30577.

Platform twin beds w/drwr's, mattresses, \$100/ea OBO; bicycle trainer w/10 spd bike, less front wheel, \$100 OBO. 488-3128.

Cosco car seat, birth to 40 lbs, infant head support, ex cond, \$25. Kim, x49850 or 244-9850.

Super Big Foot, battery, motor driven, \$60. 996-0134.

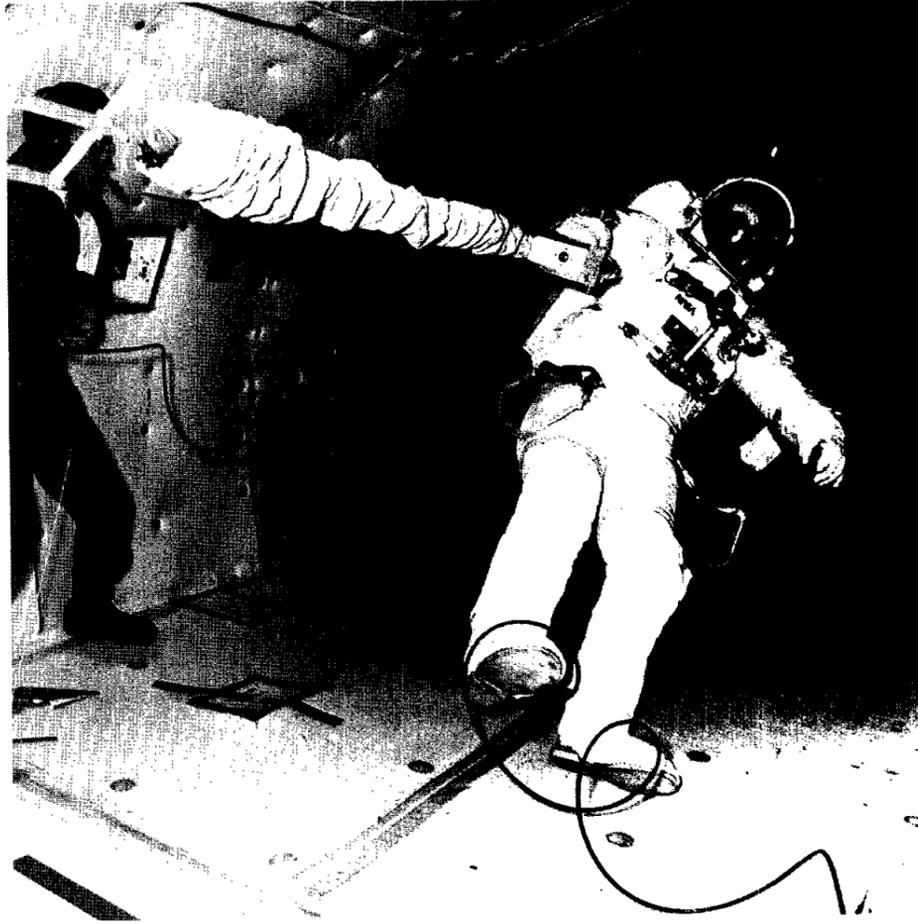
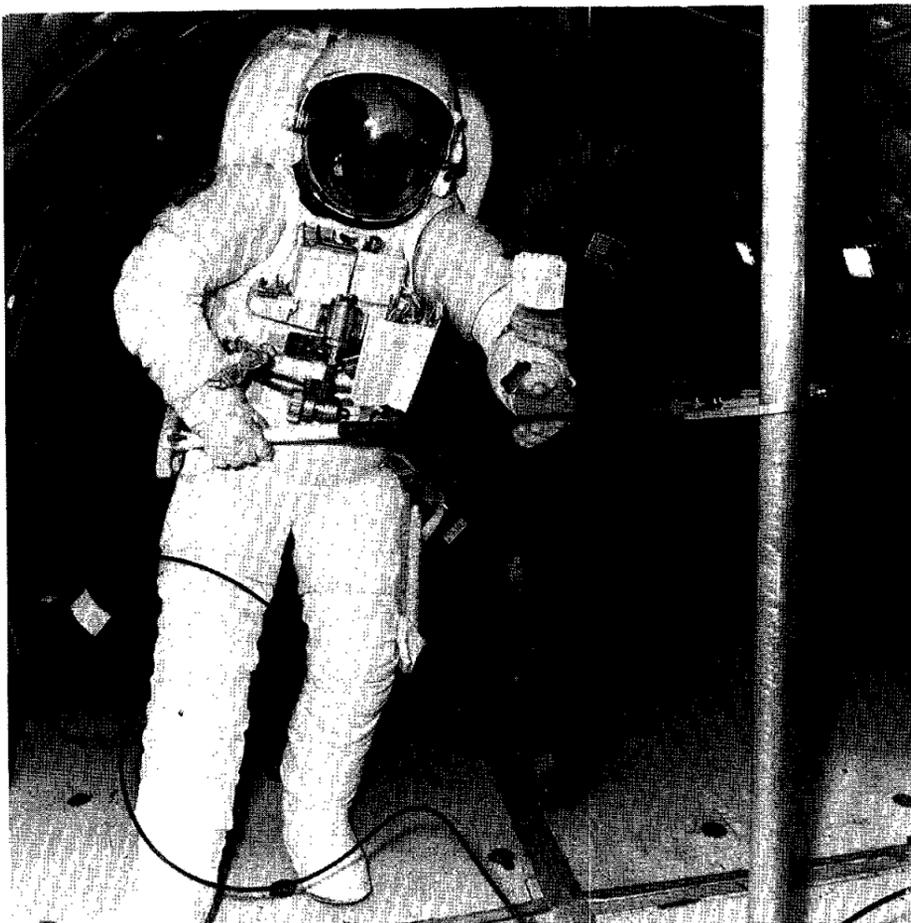
Pool table, regulation sz, one piece slate, new felt, ex cond, access, \$450. Steve, x38068 or 532-1949.

Uvey ski goggles, 2 pair, single lens, anti-fog, \$10/ea; bowling ball w/bag, \$15; Wurlitzer organ, 3 keyboards, backup rhythm section, tape player, \$550. 532-2158.

Aluminium camper top for imported long bed PU, \$125. Ben, x31271 or 649-7715.

Little Tikes train set, 14 ft of track, \$75; 20" girl's bike, \$5; 20" boy's bike, \$15; chalk board/dry marker board, twin easel, \$10. 480-9509.

Camper shell, wht fiberglass, fits 6' import type truck, \$350 BO, consider trade



Self rescue concepts to be tested on STS-49

By Pam Alloway

The scenario that a group of engineers and astronauts have been discussing lately is one they hope never happens — a Space Station *Freedom* astronaut becomes detached from the tether while working outside on the structure.

The chances of such a scenario occurring are very remote, members of the group said, but for safety's sake five concepts that will try out crew rescue ideas will be tested on STS-49 next year.

"During the course of the space station program it is conceivable that we could have a situation develop where we need crew rescue and we just want to be prepared," said Dan Brandenstein, STS-49 commander.

"In the shuttle program, during space walks we cover that eventually by maintaining enough propellant above our red line to fly over to an unattached astronaut with the shuttle and rescue him," Brandenstein said. "With the space station you don't have the capability of flying it around to chase someone down."

The five concepts that were looked at and will be tested are the astrorope, the telescopic pole, the bi-stem pole, the inflatable pole and the Crew Propulsive Device.

All of the STS-49 EVA crew members have participated in testing the concepts but mission specialist Tom Akers is the crew representative at the majority of the sessions. The other crew members participating in the concept evaluations will be Kathy Thornton, Rick Hieb and Pierre Thuot.

The concepts have been tested and crew members have practiced with them in the KC-135, on the air bearing floor in Bldg. 9 and in the Weightless Environment Training Facility, Akers said.

Engineering's Crew and Thermal Systems Division has overseen the development of the

concepts that are part of the Assembly of Station by EVA Methods flight experiment, also referred to as ASEM.

Engineers and crew members emphasize that the devices flown during STS-49 will test concepts, not hardware.

"We're looking to test and evaluate concepts on this flight so consequently the hardware that you see will not be in its final form. It would have to be refined prior to use on Space Station *Freedom*," said Steve Glenn, project manager.

Akers agreed.

"One thing we want to emphasize is this is a concept evaluation," Akers said. "If you look at the packaging of these, most are too cumbersome to actually use as a crew self rescue device. ...Most of these devices don't allow for the fact that you're probably going to have some rotational rates on you when you depart from the station and you're very possibly not going to be able to see any structure to try and reattach yourself to. So we see these as only partial solutions to the problem."

Yet crew members and engineers agreed that any information gathered from using these devices will give researchers valuable data.

"We figure we're going to learn a lot," Brandenstein said. "We can't say exactly all we're going to learn until we evaluate them. This is the first time many of these concepts have been tested. Hopefully we'll come up with some answers to questions and possibly some new ideas that will give us a little more direction to pursue crew rescue on future missions."

To both expedite the information gathering process and save money, only two of the five concepts were designed completely from the ground up — the astrorope and the inflatable pole which was designed by the Special Projects Branch's Scott Swan. The rest are primarily off-the-shelf devices.

The astrorope uses what is described as a

bola approach. It is comprised of two cleats attached to a Kevlar cord. The astrorope is thrown by hand and would wrap around an element of the space station structure. The astrorope must be manually retracted prior to rethrowing it and has an effective reach range of about 20 feet.

The telescopic pole uses a design similar to a telescoping radio antenna. It has a grapple fixture on the end and seven sections that could be manually extended. This concept would allow an unlimited number of grapple attempts and reaches up to 12 feet.

The bi-stem pole consists of two thin strips of spring steel which, when allowed to return to their equilibrium state during deployment, overlap one another to form a rigid pole. It has a grapple fixture attached to one end and would be used with a power tool for extension and retraction. This powered approach design also is capable of unlimited grapple attempts. Its reach range is about 20 feet and it was developed by ILC. Several satellites use this type of mechanism to deploy solar arrays, Glenn said.

The inflatable pole uses a tubular sock that when pressurized forms a rigid pole. It too has a grapple fixture attached to the end and could accomplish unlimited grapple attempts. Once it is attached, the sock is deflated and a hand-over-hand reapproach can be performed. This design does not allow reuse and has a reach range of 15 feet.

The Crew Propulsive Device is essentially a redesigned hand held maneuvering unit from the Skylab program. Using a powered reapproach, its reach range is limited by its nitrogen supply. Engineers at Hamilton Standard developed the CPD.

"All of the devices were designed based on certain assumptions which included that the crew member is moving away from the space station structure at a low speed and rotation,

and that the crew member is no more than 20 feet away from the structure," said Glenn.

One of the primary concerns about each of the concepts is the ability, or inability, to stop a crew member's rotation so he or she could see the structure to use a self rescue device. Of the five self-rescue concepts that will fly on STS-49 only the CPD possibly will allow control of rotation as well as translation so the crew member could get back to the space station.

Work also is under way at JSC on a project referred to as SAFER or the Simplified Aid for EVA Rescue. SAFER is described as a mini manned maneuvering unit, said Ed Whitsett of the Automation and Robotics Division.

It is smaller than an MMU, but more sophisticated than other approaches. It has an attitude hold capability which means when it is activated it immediately stops the crew member from rotating. Astronauts could then orient themselves toward the station and activate small thrusters to propel themselves back to safety. In addition to being used for self rescue situations, SAFER also could be used by shuttle astronauts to perform tasks underneath the orbiter such as closing a malfunctioned external tank door.

Akers said SAFER appears to have the most promise for solving the crew self rescue dilemma, but it is not yet ready for on-orbit testing.

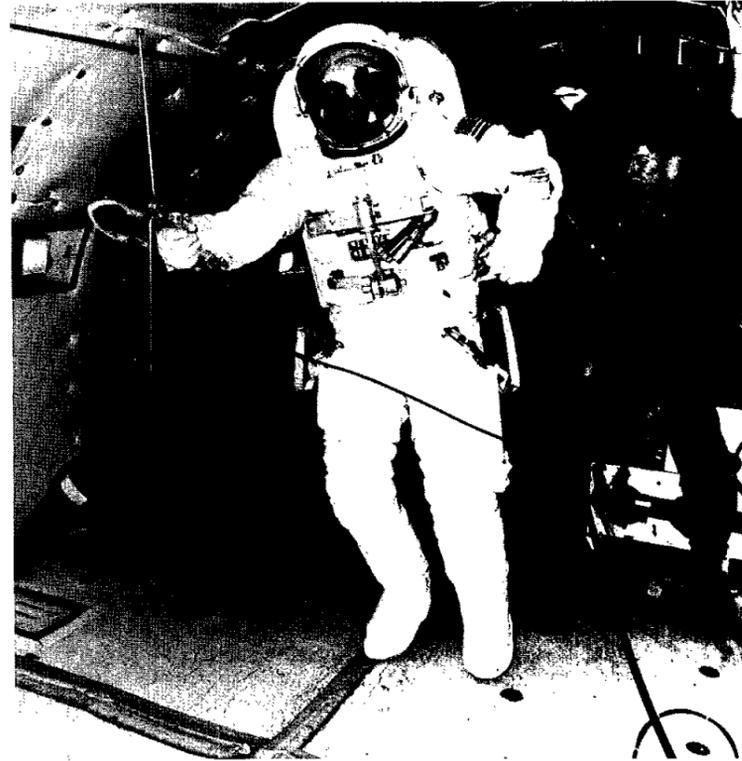
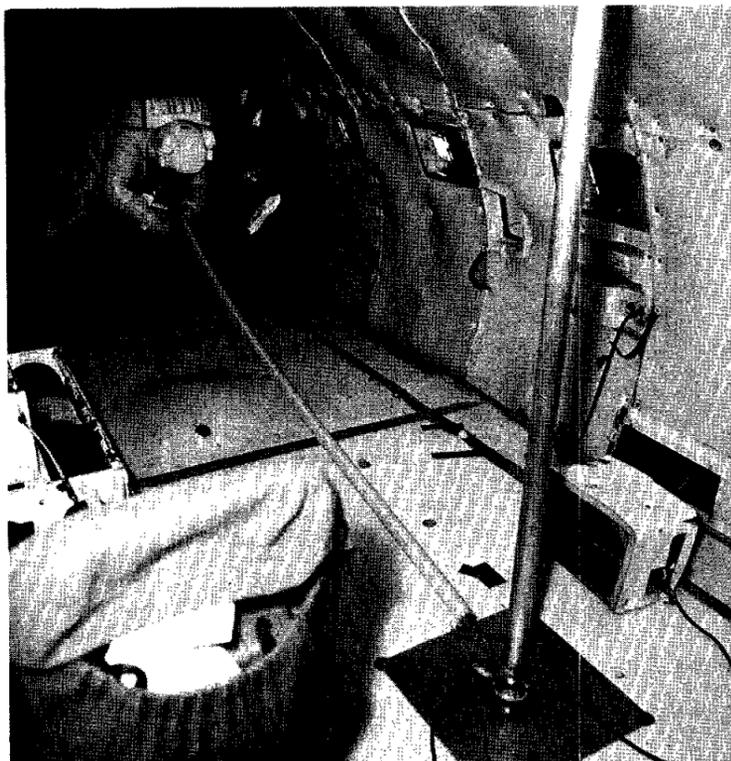
Actual on orbit evaluations of the concepts will be performed in *Endeavour's* cargo bay. Crew members will perform several evaluations per concept if time allows. Only three of the concepts have actual EVA time dedicated to them — the CPD, the bi-stem and the inflatable pole — and will take place on flight days five and six. The astrorope and the telescoping pole concepts will be evaluated as time permits, Akers said.

STS-49 will feature three spacewalks, the first of which is dedicated to retrieving and retrofitting the Intelsat-VI communications satellite.

In preparation for their on-orbit activities, crew self rescue concepts were first tested in the KC-135.

Above left: Tom Akers makes his final approach to the target with the telescoping pole device. Above right: An STS-49 crew member tests the bi-stem pole design on the KC-135. Left: After being filled with nitrogen gas, the inflatable pole design allows crew members to approach hand-over-hand on a semi-rigid pole. Right: Rick Hieb maneuvers with the crew propulsive device during tests.

JSC Photos by Jack Jacob and Bob Walck



Nicholson to direct shuttle program

Promises 'well thought-out, methodical plan' for changes

Leonard Nicholson was appointed Monday to replace Robert Crippen as director of the Space Shuttle Program. The appointment becomes effective Jan. 1, the same day that Crippen will take over as director of Kennedy Space Center.

Nicholson, who at JSC has been deputy director of the shuttle program since 1989, will head up a restructured shuttle organization from KSC.

The restructured organization reflects recommendations made to NASA by former Deputy Administrator J.R. Thompson to streamline shuttle management by dissolving the Shuttle Program Office at NASA Headquarters and

locating the core of the shuttle management team at KSC.

The restructuring will require a minimal transfer of some people from JSC to KSC, but JSC's overall role in the shuttle program is not expected to change drastically. JSC will retain responsibility and the workers needed for shuttle sustaining engineering. Functions formerly conducted at Headquarters, such as systems engineering and analysis, program control and development of the shuttle manifest, will be consolidated under the program director in the field offices.

"I will have an office at JSC for some time after Jan. 1, but I'll spend more and more time at KSC

until I feel the time is right to move there completely," Nicholson told JSC employees Friday in Teague Auditorium.

At JSC, changes are expected for at least two to three months, and full implementation will take one or two years.

"The overall goal of changes will be an effort to try to focus more of the hardware-related decisions at KSC. That is essential because JSC needs to focus on what it's going to do next," he added. "It will be a very well thought-out, methodical plan for changes. We're going to talk to the folks we think might be affected and get their opinions on what they think needs to happen.

And we're going to pay attention to the personal feelings of people."

Nicholson joined NASA in 1963 as an aerospace engineer in the Spacecraft Integration Branch at JSC. He has held a number of senior positions at JSC, including technical assistant to the manager, Apollo program; manager, STS Operations Office, Shuttle Payload Integration and Development Program; technical assistant to the director; and manager, Mission Integration Office, National STS Program. He has received a number of NASA awards, including the Exceptional Service Medal and two NASA Outstanding Leadership Medals.



Leonard Nicholson

Shuttle crews receive awards for exploration

Members of three space shuttle crews were honored recently with the "Vladimir M. Komarov Diploma" by the National Aeronautic Association for their "outstanding achievements in the field of exploration of outer space."

The award, from the Council of the Federation Aeronautique Internationale, was presented during a ceremony at NASA Headquarters.

Representing the honorees were Commander Dan Brandenstein and Mission Specialist Bonnie Dunbar from the January 1990 STS-32 mission; Commander Vance Brand, Mission Specialists Jeff Hoffman, Mike Lounge and Bob Parker and Payload Specialist Ron Parise from the December 1990 STS-35 mission; and Commander Dick Richards and Mission Specialists Bruce Melnick and Tom Akers from the October 1990 STS-41 mission.

During STS-32, the crew retrieved the Long Duration Exposure Facility, which was deployed in 1984 and held many experiments testing long-duration exposure to the environment of space. STS-35 carried the ASTRO-1 astrophysics observatory in the payload bay, which gathered data on a variety of celestial objects during the nine-day mission. The joint NASA and European Space Agency's *Ulysses* spacecraft was deployed by the STS-41 crew.

The Komarov Diploma was established in 1970 by the FAI in honor of Soviet Cosmonaut Vladimir M. Komarov who lost his life while serving on the flight of Soyuz 1 in 1967.

Trivia Question 76

76. (Five bonus points.) How many trivia questions did Space News Roundup get wrong last week?

Answer: Two by our books.

Answer 16 identified Tom Stafford as the astronaut with the least amount of time between missions. Steve Nagel beat Stafford's record in 1985 with 128 days between STS-51G and STS-61A.

Answer 46 identified STS-39 as the first use of new general purpose computers. It was STS-37.

Sorry for the errors, but at least we gave you something to argue about this week.

Ten comprise council for Asian Pacific Americans

Ten JSC employees recently were selected to serve as the 1992 JSC Asian Pacific American Program Council.

The council assists and advises the Asian Pacific American Program manager on issues that have centerwide implications and are related to the employment, training and advancement of Asian Pacific American employees. The council also organizes events that highlight the achievements of Asian Pacific Americans and promotes overall awareness of their culture, work ethic and behaviour.

Council members are: Dan D.M. Tran, Safety, Reliability and Quality Assurance Office; Dorothy

S. Rasco, Center Operations Facility Development Division; Tu-Quynh Tran, Mission Operations Training Division; Renu Weiss, Jefferson Associates; Sylvia Hu, Hernandez Engineering; Thuy Mai, Unisys; Lachhman Das, Johnson Controls; Kumar Krishen, Information Systems Directorate; Marion T. Li, Loral; and Katie Nguyen, Center Operations Facility Development Division.

Recommendations and/or suggestions regarding the Asian Pacific American Program may be directed to any council member or to Pam Adams, Asian Pacific American Program manager, x33761.



HOLIDAY GENEROSITY — Lockheed's Marcia Taylor, Tammy Goodner and Darla Koros, from left, marvel at the holiday donations of their co-workers in Bldg. 44. The trio coordinated a full van load of food, clothing, toy and baby item donations to the Star of Hope, a local charity. The Tracking and Communications Division employees were among many groups of people at JSC who shared with those less fortunate.

JSC Photo By Benny Benavides

Seven workers earn Aviation Safety Awards

By Barbara Schwartz

The men and women who work at JSC must exceed generally accepted quality standards if NASA is to successfully accomplish its goals, Flight Crew Operations Director Don Puddy said Monday as he recognized seven employees with Aviation Safety Awards.

"The often quoted quality standard, '99 percent is good enough,' is not acceptable for aircraft and space operations," Puddy said.

Ace Beall, chief of the Aviation Safety Office, assisted Puddy in presenting the awards that recognize outstanding accomplishments and continuous improvement in aviation safety.

Astronaut Charles F. Bolden Jr. earned the Stephen D. Thorne Top Fox Award for his "significant contributions" in several key safety positions during his career at JSC, including Astronaut Office safety officer, liaison to SR&QA directorates at Marshall Space Flight Center and Kennedy Space Center, special assistant to the JSC director, and chief of the Safety Division.

The Flight Simulation Engineering Award was given to Shuttle Training Aircraft flight simulation engineer John D. Breitenbach for "preparing shuttle pilots for the demanding task of orbiter approach and landing." Breitenbach made suggestions to improve the

overall efficiency and safety of STA flight operations.

Gregory C. Johnson, Flight Operations Branch, received the James A. Korkowski Excellence in Achievement Award for his broad range of responsibilities as a project pilot for T-38s. Among Johnson's accomplishments was acquisition of six T-38Bs.

Kevin R. Kregel, Flight Operations Branch, was honored with the Stuart M. Present Flight Achievement Award. Kregel developed a flight test plan for the avionics upgrade T-38 prototype aircraft and flew critical early tests.

Lead software engineer Jack L. Woods earned the Mark Heath Aircraft Engineering Award for his data

reviews on flight and preflight test software. Woods also was cited for trouble-shooting STA software and evaluating STA wind data and touch-down performance.

Quality Assurance inspector A. Pete Dowling Jr., was honored for sustained outstanding performance and specifically for finding a faulty parachute actuator. His discovery led to enhanced inspection and maintenance procedures. Dowling received the John T. Bassham Quality Assurance Award.

Michael D. Axline received the Aircraft Maintenance Award for increasing attention to corrosion control and foreign object damage prevention on NASA's T-38 fleet.

Nominees sought for quality award

Nominations are being accepted for the Quality Partnership Award presented twice a year by JSC's Safety, Reliability and Quality Assurance Office.

The deadline for nominations is Jan. 15, 1992.

The award recognizes individuals outside SR&QA who play key roles in helping JSC employees and support contractors reach a common goal of excellence.

Nominations should be submitted to the Quality Assurance and Engineering Division, Code ND, by the candidate's peers or managers. Nominees may not work in the quality field or make direct contributions to the SR&QA Office at JSC.

For more information, call M.C. Perry, chief of the Quality Assurance and Engineering Division, x343352.



ON DECK — The STS-42 crew checks out the International Microgravity Laboratory-1 before *Discovery's* payload bay doors are closed. The crew — from left, Ron Grabe, Bill Readdy, Ulf Merbold, Norm Thagard, Dave Hilmers, Steve Oswald and Roberta Bondar — will spend seven days working in the Spacelab module.

Discovery rolls onto launch pad; schedule holding

By James Hartsfield

Discovery, with the International Microgravity Laboratory-1 aboard, took center stage Thursday as it was moved to Launch Pad 39A to prepare for liftoff on mission STS-42 in January.

A long-duration simulation Tuesday and Wednesday put the STS-42 crew, the flight control team at JSC and the payload control team at Marshall Space Flight Center through their paces. A dress rehearsal of the launch countdown, including the STS-42 crew, is scheduled for Jan. 6-7 at the launch pad.

Shuttle managers will meet at Kennedy Space Center on Jan. 9 for a final review of preparations for the mission and set an official launch date, perhaps as early as Jan. 22. Last weekend, *Discovery* was hoisted skyward and attached to the external tank and solid rockets for STS-42. The mobile launch platform began its trek to the pad at about 1 a.m. Houston time Thursday.

Elsewhere, work continues to go smoothly readying *Atlantis* for its next space flight, STS-45 with the Atmospheric Laboratory for Applications and Science aboard, planned for mid-March 1992. *Atlantis* is in bay 2 of KSC's processing hangar. This week, technicians performed post-flight checks of the main engines, inspected the 17-inch fuel line connections and deserviced the orbital propulsion systems.

In bay 1 of the hangar, *Endeavour* continues preparations for its first space flight, STS-49 in spring 1992. Technicians this week continued tests of the star trackers, crew hatch, drinking water system and landing gear.

